I claim:

1. A computer disk drive having a driven disk and a head assembly comprising at least one read/write head associated with the disk, wherein both heads and disk are fabricated of crystalline silicon.

2. The computer disk drive of claim 1, wherein the disk is coated with an amorphous layer of neodymium and cobalt.

3. The computer disk drive of claim 1, wherein the head assembly is mounted on a single silicon wafer.

4. The computer disk drive of claim 3, wherein a head assembly is provided for each side of a disk.

5. The computer disk drive of claim 3, wherein the disk is divided into two or more circular zones, and a separate head assembly is provided for each zone.

6. The computer disk drive of claim 3, wherein the disk drive has read and write electronics that are mounted on the same silicon wafer which mounts the magnetic heads.

7. The computer disk drive of claim 6, wherein the silicon wafer includes a beveled edge mounting the heads, and the read and write electronics are mounted elsewhere on the silicon wafer in a position removed from the vicinity of the disk.

8. The computer disk drive of claim 3, including proximity sensors to sense the spacing of the head on the wafer relative to the disk, and piezoelectric actuators directed by the proximity sensors to precisely control said spacing.

9. A computer disk drive comprising a driven disk having a plurality of data storage tracks, and a disk assembly comprising at least one fixed read/write/verify head associated with the disk, wherein the head assembly processes all tracks

concurrently, thus enabling all tracks to be processed during a single revolution of the disk.

10. The computer disk drive of claim 9, wherein the head assembly includes a disk controller having means for performing repeated data insertions to maintain the proper order of pending operations.

11. The computer disk drive of claim 10, wherein the disk controller includes means to move entire blocks of data simultaneously to/from the head assembly.

12. The computer disk drive of claim 8, wherein the disk controller contains data buffers, and including a data transfer module for transferring data between the data buffers, and an operation sequence module connected to a host computer for accepting, sorting and completing requests instructed by said computer, wherein both modules operate concurrently and semi-independently.

13. In a disk rotor drive assembly that includes a spindle and a data disk mounted thereon for rotation therewith relative to a support, the improvement comprising a magnetic bearing having a rotor member mounted on the spindle for rotation therewith and a stator member mounted on the support, wherein one of said members has a plurality of identical sets of permanent magnets in a circumferential array, each set comprising four different magnets arranged, sequentially counterclockwise, with north poles respectively pointed inward, counterclockwise, outward and clockwise, such that rotation of the rotor induces magnetic fields in the reactance loops that cooperate with the magnetic fields of the permanent magnets to suspend the rotor relative to the stator for substantially frictionless relative rotation.

14. The improvement of claim 13, including reactance loops spaced axially above and beneath the rotor.

15. The improvement of claim 14, wherein said one member is the rotor and the other said member is the stator.

16. The improvement of claim 13, including a pair of said magnetic bearings, each of which is oppositely axially spaced from the disk to support both ends of the spindle.

17. The improvement of claim 14, including a mechanical bearing mounting the spindle for initial rotation and including inner and outer race members, said members being separated to disengage the mechanical bearing races when said magnetic bearing becomes effective to support said spindle.

18. The disk drive assembly of claim 1, wherein the disk is mounted on a spindle for rotation therewith relative to a support and including a magnetic bearing having a rotor member mounted on the spindle for rotation therewith and a stator member mounted on the support, wherein one of said members have a plurality of identical sets of permanent magnets in a circumferential array, each set comprising four different magnets arranged, sequentially counterclockwise, with north poles respectively pointed inward, counterclockwise, outward and clockwise, plurality of identical sets of permanent magnets in a circumferential array, such that rotation of the rotor induces magnetic fields in the reactance loops that cooperate with the magnetic fields of the permanent magnets to suspend the rotor relative the stator for substantially frictionless relative rotation, wherein said disk drive assembly is encapsulated within an enclosure that is subjected to a vacuum, thereby enabling use of extremely high disk rotation speeds without turbulence and consequent vibration.

19. The computer disk drive of claim 1, wherein the disk is coated with bistable organic dyes and the head includes photo-transistors to read and verify data and LEDs for writing and erasing data on the disk.

20. A method of operating a computer disk drive which utilizes the apparatus of any of claims 1 – 12, thereby enabling both sequential and random data access time improvements over prior art technologies of by a factor of at least 2000.